# CMPT 280

## Topic 10: Deletion from Ordered Binary Trees

Mark G. Eramian

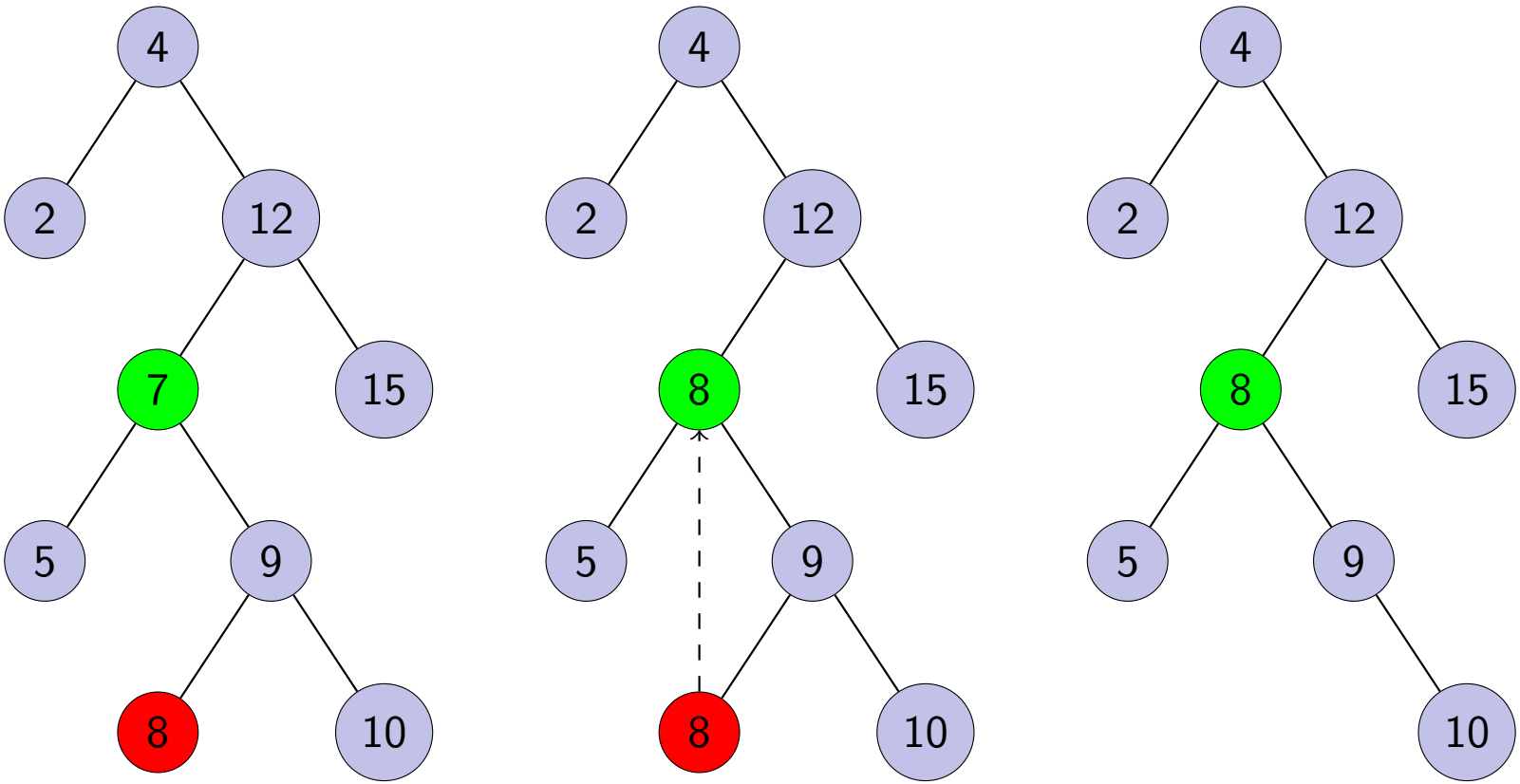
University of Saskatchewan

# References

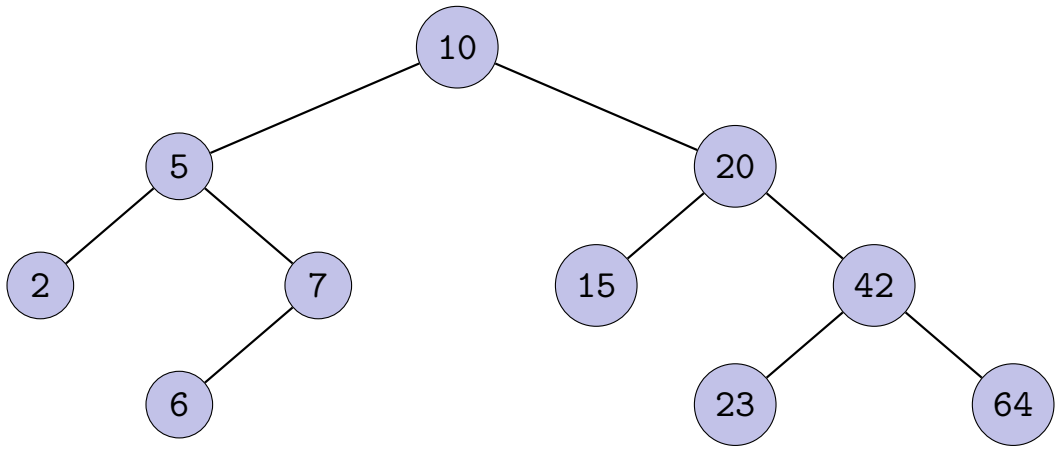
- Textbook, Chapter 10

# Deleting an Item in an Ordered Tree

## When Deleted Node has 2 Children



# Exercise 1




- Starting with the pictured tree each time, what would be the result of deleting
  - element 6?
  - element 7?
  - element 42? 5? 10?

# Cursor Position After Deletion

- We want to implement the deletion algorithm for `OrderedSimpleTree280<I>`.
- Desired workflow:
  - Use `search()` to position cursor at element to be deleted.
  - Call `deleteItem()` to remove the element at the cursor.
- Where should the cursor be positioned after deletion? Options:
  - On replacement node
  - On inorder successor or predecessor

# Exercise 2

- Implement the `deleteItem()` method for the cases where the node being deleted has 0 or 1 child.

# Exercise 3

- Add to the `deleteItem()` method the code for the case where the node to be deleted has two children.
- What is the time complexity of our method?

# Exercise 4

- Write some tests to see if our `deleteItem()` method works.